IN THE CLAIMS:

1-407 (cancelled).

408. (previously presented) A method for generating laser beams for engraving cups in a processing surface of a material, comprising the steps of:

providing at least one diode-pumped fiber laser;

providing each fiber laser with at least one output;

arranging in a first ordering pattern at least two of said outputs;

at least one of shaping and aligning the laser beams emerging from the outputs of the individual fiber lasers such that they impinge onto said processing surface in a second ordering pattern to engrave said cups by eroding a material of said processing surface, said laser beams having a power density and energy sufficiently high for eroding said material to create said cups; and

wherein the material comprises copper on a cylinder of a rotogravure engraving machine.

409. (previously presented) A method for engraving cups in a copper material surface of a printing form, comprising the steps of:

providing at least one fiber laser;

providing each fiber laser with at least one output;

arranging in a first ordering pattern at least two of said outputs; and

at least one of shaping and aligning laser beams emerging from the outputs such that they impinge onto said copper material surface in a second ordering pattern to engrave said cups by eroding the copper material, said laser beams having a power density and energy sufficiently high for eroding said copper material to create said cups.

410. (previously presented) The method according to claim 409 wherein the copper is melted and evaporated to create said cups.

411-416 (cancelled)

417. (previously presented) A printing form engraving machine, comprising:

a printing form having a copper surface;

at least one fiber laser;

each fiber laser comprising at least one output;

at least two of said outputs being arranged in a first ordering pattern;

laser beams emerging from the outputs of the individual fiber lasers being at least one of shaped and aligned such that they impinge onto said copper surface in a second ordering pattern for engraving said cups; and

said emerging laser beams having a power density and energy which are sufficiently high to erode copper from said copper surface for creating said cups.

418. (previously presented) Engraving machine according to claim 417 wherein the copper is on a surface of a rotary drum of a rotogravure engraving machine.

419. (previously presented) The system according to claim 417 wherein said outputs are focused onto a spot having less than a 10 μm diameter.

420. (previously presented) A laser radiation source for generating laser beams for processing material by engraving cups in a processing surface thereof, comprising:

at least one diode-pumped fiber laser;

each fiber laser comprising at least one output;

at least two of said outputs being arranged in a first ordering pattern;

the laser beams emerging from the outputs of the individual fiber lasers being at least one of shaped and aligned such that they impinge onto said processing surface in a second ordering pattern for engraving said cups;

said emerging laser beams having a power density and energy sufficiently high to erode material from said processing surface for creating said cups; and

said material comprises copper on a rotating cylinder of a rotogravure engraving machine.

421. (previously presented) An apparatus for processing material with laser radiation in order to engrave cups in at least one processing surface of the material, comprising:

at least one laser radiation source for generating laser beams for processing the at least one processing surface by engraving the cups therein;

the laser radiation source comprising at least one diode-pumped fiber laser;

each fiber laser comprising at least one output;

at least two of said outputs being provided;

the outputs of the fiber lasers being arranged in a first ordering pattern;

the laser beams emerging from the outputs of the individual fiber lasers being at least one of shaped and directed such that they impinge said processing surface in a second ordering pattem;

the laser beams having a power density and energy sufficiently high to erode the material to engrave said cups;

a controller for controlling the laser radiation source;

at least one material carrier for the processing surface;

a unit for generating at least one relative movement between the laser beams and the processing surface; and

the material comprises copper on a cylinder of a rotogravure engraving machine.

422. (currently amended) A rotogravure engraving system for engraving half-tone cups for receiving printing fluid into a printing form comprising a rotatable rotogravure printing drum having a round outer metal peripheral processing surface, comprising:

a mounting which receives said rotatable printing drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said focusing optics;

a modulator which controls the laser beam; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the laser beam as said drum is rotating onto said metal processing surface as a spot having a spot size sufficiently small to create the half-tone cups for printing fine structure rotogravure images or text by removing metal material from said processing surface.

423. (previously presented) A system according to claim 422 wherein the spot size is equal to or less than approximately 10 micrometers in diameter.

424. (previously presented) A system according to claim 422 wherein the laser beam at the spot has a power of at least approximately 100 watts at full beam intensity.

425. (currently amended) A system according to claim 422 wherein the laser beam at said spot has a power density of at least approximately ~~10^8~~ $\underline{10^7}$ W/cm^2 at full beam intensity.

426. (previously presented) A system according to claim 422 wherein said pump source comprises at least one laser diode.

427. (currently amended) A system according to claim 422 wherein:

a housing is provided having said rotatable printing drum mounting;

the pump source and <u>an end of</u> said laser fiber <u>opposite said outfeed end</u> ~~infeed end~~ are mounted in a fixed position with respect to said housing;

the laser gun is mounted for lateral movement along an axis parallel to a rotational axis of said rotatable drum; and

said laser gun having at an output end adjacent said drum said focusing optics and at an input end said modulator, said laser fiber outfeed end being connected to said input end of said laser gun and moveable as said laser gun moves.

428. (previously presented) A system according to claim 427 wherein said laser fiber outfeed end is secured at said input end of said laser gun.

429. (currently amended) A system according to claim 422 wherein a ~~mirror~~ reflection surface is positioned to deflect the laser beam when it is intended that it not strike said processing surface.

430. (previously presented) A system according to claim 422 wherein a sump is positioned to receive the laser beam when it is intended that it not strike said processing surface.

431. (currently amended) A system of claim 430 wherein a ~~mirror~~ reflector surface is positioned to deflect said laser beam to said sump when it is intended that the laser beam should not strike said processing surface.

432. (currently amended) A system according to claim 431 wherein said ~~mirror~~ reflection surface and sump are positioned on said laser gun.

433. (previously presented) A system according to claim 422 wherein a diffraction optics is provided between said focusing optics and an output of said modulator.

434. (previously presented) The system of claim 422 wherein the modulator is located on said laser gun.

435. (currently amended) A system according to claim 422 wherein said pump source comprises a plurality of laser diodes followed by an optics which directs outputs from said plurality of laser diodes to ~~said infeed~~ an end of said laser fiber opposite said outfeed end.

436. (currently amended) A system according to claim 422 wherein said laser fiber has ~~an infeed~~ a reflection surface ~~mirror~~ at ~~said~~ an ~~infeed~~ end opposite said outfeed end.

437. (previously presented) A system according to claim 427 wherein said laser fiber has a length which is significantly greater than a distance between said pump source and said input end of said laser gun where said laser fiber outfeed end is connected.

438. (previously presented) A system according to claim 427 wherein said laser fiber is flexibly arranged in a pattern with bends to take up an excess length of said laser fiber between said laser gun and said pump source.

439. (previously presented) A system according to claim 427 wherein said housing has a controller, and wherein at a top side of said housing said rotatable drum is positioned along with said laterally moveable laser gun.

440. (currently amended) A system according to claim 422 wherein said laser fiber has an outfeed ~~mirror~~ reflection surface at said outfeed end.

441. (previously presented) A system according to claim 422 wherein at said outfeed end said laser fiber has a terminator with an optics adjacent an input of said modulator which converts the laser beam exiting the laser fiber with diverging rays to parallel rays which enter at the input of the modulator.

442. (previously presented) A system according to claim 441 wherein said terminator is adjustably attached to said laser fiber at said outfeed end to set a distance between an outfeed end of said core of said laser fiber and said optics.]

443. (previously presented) A system according to claim 422 wherein said modulator comprises an acousto-optical modulator which receives an acoustical control signal having a frequency which controls a deflection angle of the laser beam output from said modulator.

444. (previously presented) A system according to claim 422 wherein said modulator comprises an acousto-optical modulator and an amplitude of an acoustical control signal fed to said modulator controls an amplitude of the laser beam exiting from the modulator.

445. (currently amended) A system according to claim 429 wherein said ~~mirror~~ reflection surface is positioned after an output of said modulator and is angled so as to direct said laser beam deflected by the ~~mirror~~ reflection surface to said sump, said sump being attached to said laser gun radially outwardly from a longitudinal axis of said laser gun.

446. (currently amended) A system according to claim 429 wherein said ~~mirror~~ reflection surface is positioned on said laser gun with respect to a longitudinal axis of said laser gun between an output of said modulator and a diffraction optics in said laser gun.

447. (previously presented) A system according to claim 422 wherein said modulator comprises an acousto-optical modulator on said laser gun and is positioned such that an acoustical control signal fed to said modulator controls an output angle of said laser beam from said modulator by a frequency of said acoustical control signal to selectively strike said processing surface through said focusing optics.

448. (currently amended) A system according to claim 422 wherein said modulator comprises an acousto-optical modulator positioned in said laser gun such that given no acoustical control signal fed to said modulator the output laser beam from the modulator hits said ~~mirror~~ reflection surface and given presence of the acoustical signal with a prescribed frequency said laser beam output from said modulator passes through said focusing optics and hits said processing surface.

449. (previously presented) A system according to claim 433 wherein said diffraction optics is mounted in said laser gun, and, relative to a traveling direction of the laser beam, said diffraction optics causes a laser beam output from said modulator to diverge prior to passing through said focusing optics.

450. (previously presented) A system according to claim 422 wherein said focusing optics focuses the laser beam onto said processing surface to form a laser spot at said processing surface having a diameter equal to or less than approximately 10 um.

451. (previously presented) A system according to claim 422 wherein said metal surface of said rotogravure drum in which the half-tone cups are engraved by said laser beam comprises copper.

452. (previously presented) A system according to claim 422 wherein said metal surface of said rotogravure drum in which the half-tone cups are engraved by said laser beam comprises chrome.

453. (previously presented) A system according to claim 422 wherein said laser beam output by the laser gun is oriented so that the laser beam strikes said processing surface of said cylindrical drum at an angle which is less than 90° relative to a tangent perpendicular to said rotational axis of said drum where said laser beam strikes said processing surface.

454. (currently amended) A system according to claim 422 wherein said laser fiber converts a relatively large diameter of a pump spot at ~~said infeed~~ <u>an</u> end <u>opposite the outfeed end</u> to a relatively much smaller diameter of the output laser beam from said core at said outfeed end of said laser fiber.

455. (previously presented) A system according to claim 422 wherein said laser fiber at said outfeed end connects through a passive fiber to said laser gun.

456. (previously presented) A system according to claim 422 wherein said laser fiber at said outfeed end has a terminator, said terminator having an open portion with one end of said open portion having an end of said laser fiber core and pump core positioned thereat and at an opposite end of said open portion an optics positioned in front of said modulator.

457. (previously presented) A system according to claim 422 wherein a plurality of laser fibers are provided between said pump source and said laser gun, and a coupler which combines outfeed ends of said plurality of laser fibers being connected to said laser gun.

458. (previously presented) A system according to claim 422 wherein a plurality of fiber lasers are provided.

459. (previously presented) A system according to claim 422 wherein said laser fiber connects to a coupler having at its output end a plurality of passive fibers, output ends of said passive fibers being connected to said laser gun.

460. (previously presented) A system according to claim 422 wherein said modulator comprises an electro-optical modulator which changes a polarization direction of a laser beam passing therethrough, and wherein a polarization direction sensitive mirror follows said electro-optical modulator so that depending upon a polarization direction, the mirror either transmits a laser beam which is

communicated to said focusing optics and then to said processing surface, or deflects the laser beam.

461. (previously presented) A system according to claim 422 wherein a plurality of said laser fibers are provided connected to said laser gun for outputting onto said processing surface a plurality of said laser beams.

462. (previously presented) A system according to claim 461 wherein said plurality of laser beams are focused to a common spot.

463. (previously presented) A system according to claim 461 wherein said plurality of laser beams are arranged to provide spots along a line next to one another on said processing surface.

464. (previously presented) A laser system according to claim 422 wherein a plurality of said laser guns are provided spaced from each other adjacent to said rotatable drum and in a direction along said rotational axis of said drum, each laser gun being fed by at least one laser fiber.

465. (previously presented) A system according to claim 422 wherein in said laser gun between said focusing optics and said processing surface a base member having an inner cavity is provided with a transparent plate through which said laser beam passes on its way to said processing surface through said cavity, and after said transparent plate at least one extraction channel which extracts unwanted eroded material from said cavity.

466. (previously presented) A system according to claim 427 wherein the housing has at an upper side said rotatable drum and said movable laser gun positioned adjacent thereto, and wherein a lower portion of said housing has a controller, modulation signal unit, and a cooling system, the cooling system being connected to cool said pump source, and wherein said laser fiber extends between said pump source fixedly mounted in said lower portion of said housing up to said laser gun at said upper portion of said housing.

467. (previously presented) A system according to claim 422 wherein said laser beam striking said processing surface creates at least a portion of said half-tone cup as the rotatable drum rotates.

468. (previously presented) A system according to claim 422 wherein said laser beam striking the processing surface is amplitude modulated to cause a changing intensity of said laser light beam for causing different amounts of said metal surface to be eroded depending on an intensity of said laser light beam.

469. (previously presented) A system according to claim 422 wherein the half-tone cups have a penetration depth which changes dependent upon a tone value gradation desired for said half-tone cup.

470. (previously presented) A system according to claim 422 wherein said half-tone cups produced by said laser beam have 256 tone value gradations.

471. (previously presented) The system according to claim 422 wherein an intensity of said laser beam controlled by said modulator is in accordance with an 8 bit signal fed to said modulator.

472. (previously presented) A system according claim 422 wherein said laser beam is controlled so that a maximum depth of said half-tone cups is approximately 40 μm.

473. (previously presented) A system according to claim 422 wherein said laser beam is controlled such that a minimum depth of said half-tone cups is approximately 3 μm.

474. (previously presented) A system according to claim 422 wherein a modulation control of said laser beam allows adjusting a depth of said cups within a fraction of a micrometer.

475. (currently amended) A system according to claim 422 wherein the laser beam output by the laser gun engraves the half-tone cups with a resolution on the printing form drum of at least at least one of 4,900 cups per cm^2 and 70 lines per ~~cm^2~~ <u>cm</u> screen resolution.

476. (previously presented) A system according to claim 422 wherein the modulator is located on the laser gun and an optics is provided such that parallel rays of the laser beam leaving the modulator diverge and when the laser beam passes through the focusing optics rays of the laser beam converge.

477. (previously presented) A system according to claim 422 wherein the rotatable drum comprises a chrome-plated copper surface.

478. (previously presented) A system according to claim 422 wherein the continuous wave laser beam erodes the rotating drum processing surface to create said cups.

479. (previously presented) A system according to claim 422 wherein a plurality of screens are simultaneously produced on the drum with each screen being produced by a separate laser gun.

480. (previously presented) A system according to claim 422 wherein the processing surface comprises one of the metals copper and chrome.

481. (previously presented) A system according to claim 422 wherein the laser beam impinging on the processing surface creates the cup such that a shape of the cup is created independently of a size of the cup at the processing surface.

482. (previously presented) A system according to claim 422 wherein the laser beam impinging on the processing surface creates an area of the cup at the processing surface which is independent of its depth.

483. (previously presented) A system according to claim 422 wherein the laser fiber has an absorption efficiency of more than 60%.

484. (previously presented) A system according to claim 422 wherein the laser fiber core has a diameter which creates a laser radiation beam at its outfeed end having a diameter of approximately 10 μm or less.

485. (previously presented) A system according to claim 422 wherein said rotatable drum has a rotational axis which is horizontal.

486. (previously presented) A system according to claim 427 wherein the laser fiber outfeed end is directly connected at the input end of the movable laser gun and proceeds in a pattern with bends back to the pump source at a fixed location on the housing.

487. (currently amended) A rotogravure engraving system for engraving half-tone cups for receiving printing fluid into a printing form comprising a rotable rotogravure printing drum having a round outer metal peripheral processing surface, comprising:

a housing having a mounting which receives said rotatable printing drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser diode, said laser fiber outputting a continuous wave laser beam, and said pump source and ~~infeed~~ an end of the laser fiber opposite the outfeed end being fastened at a fixed position in said housing;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the outfeed end of said laser fiber being secured at an input of said laser gun;

a modulator in said laser gun which controls the laser beam; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the laser beam as said drum is rotating onto said metal processing surface as a spot having a spot size sufficiently small to create the half-tone cups for printing fine structure rotogravure images or text by removing metal material from said processing surface.

488. (currently amended) A rotogravure engraving system for engraving half-tone cups for receiving printing fluid into a printing form comprising a rotable rotogravure printing drum having a round outer metal peripheral processing surface, comprising:

a mounting which receives said rotatable printing drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said focusing optics;

a modulator which controls at least an intensity of the laser beam; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the laser beam as said drum is rotating onto said metal processing surface as a spot having a spot size sufficiently small to create the half-tone cups for printing fine structure rotogravure images or text by removing metal material from said processing surface, and wherein the processing surface is comprised of at least one of the metals copper and chrome.

489. (currently amended) A method for engraving half-tone cups for receiving a printing fluid into a rotogravure printing form, comprising the steps of:

providing a mounting which receives the printing form comprising a rotatable rotogravure printing drum having a round outer metal peripheral processing surface;

providing at least one fiber laser comprising a pump source and a laser fiber comprising ~~an infeed end and~~ an outfeed end, the pump source being positioned at said ~~infeed end~~ laser fiber, and the laser fiber comprising a core surrounded by a pump core;

providing a laser gun mounted for lateral movement alongside said rotatable drum, said laser gun having a focusing optics, and a laser beam output by said laser fiber outfeed end being deliverable to said focusing optics;

providing a modulator to control the laser beam; and

while rotating said drum, outputting from said laser fiber the laser beam which is a continuous wave beam and which is diffraction-limited to permit said focusing optics to focus the laser beam onto said processing surface as a spot having a spot size sufficiently small to create the rotogravure half-tone cups in said metal processing surface for printing fine structure rotogravure images or text by removing metal material from said processing surface.

490. (previously presented) A method according to claim 489 wherein the spot size is equal to or less than approximately 10 micrometers diameter.

491. (previously presented) A method according to claim 489 wherein the laser beam at the spot has a power of at least approximately 100 watts at full beam intensity.

492. (currently amended) A method according to claim 489 wherein the laser beam at said spot has a power density of at least approximately ~~10^8~~ <u>10^7</u> W/cm^2 at full beam intensity.

493. (previously presented) A method according to claim 489 wherein said pump source comprises at least one laser diode.

494. (currently amended) A method according to claim 489 including the steps of:

providing a housing for said rotatable printing drum mounting;

mounting the pump source and <u>an end of</u> said laser fiber ~~infeed end~~ <u>opposite said outfeed end</u> in a fixed position with respect to said housing;

mounting the laser gun for lateral movement along an axis parallel to a rotational axis of said rotatable drum; and

providing said laser gun at an output end adjacent said drum with said focusing optics, and at an input end said modulator, and providing said laser fiber outfeed end connected to said input end of said laser gun so that as the laser gun moves the laser fiber outfeed end also moves.

495. (previously presented) A method according to claim 494 wherein said laser fiber outfeed end is secured at said input end of said laser gun and moves along with said laser gun during said engraving of said half-tone cups.

496. (currently amended) A method according to claim 489 wherein a ~~mirror~~ reflection surface is positioned in said laser gun after an output of said modulator, a sump is positioned on said laser gun, and as the drum is being engraved, a laser beam from said modulator is deflected by said mirror to said sump.

497. (previously presented) A method according to claim 489 including providing an optics between said focusing optics and an output of said modulator so that parallel rays from said modulator diverge prior to the laser beam entering the focusing optics.

498. (currently amended) A method according to claim 489 including providing a plurality of laser diodes followed by an optics which directs outputs from said plurality of laser diodes to ~~said infeed~~ an end of said laser fiber opposite said outfeed end.

499. (previously presented) A method of claim 489 including the step of providing said laser fiber with a length sufficiently greater than a distance between said pump source and an input end of said laser gun where said laser fiber outfeed end is connected.

500. (previously presented) A method according to claim 489 wherein at said outfeed end of said laser fiber an optics is provided so that the laser beam entering an input to said modulator has parallel rays.

501. (previously presented) A method according to claim 489 including the step of connecting said laser fiber at said outfeed end through a passive fiber to said laser gun.

502. (previously presented) A method according to claim 489 wherein said modulator comprises an acoustical-optical modulator mounted in said laser gun and providing an acoustical control signal having a frequency which controls a deflection angle of the laser beam output from said modulator.

503. (previously presented) A method according to claim 489 wherein an amplitude of a control signal fed to said modulator controls an amplitude of the laser beam exiting from the modulator.

504. (previously presented) A method according to claim 489 wherein said modulator comprises an acousto-optical modulator mounted in said laser gun and is positioned such that an acoustical control signal fed to said modulator controls by its frequency an output angle of said laser beam from said modulator to selectively strike said processing surface through said focusing optics.

505. (previously presented) A method according to claim 489 wherein said half-tone cups are engraved by said laser beam in a copper processing surface.

506. (previously presented) A method according to claim 489 wherein said half-tone cups are engraved by said laser beam in a chrome processing surface.

507. (previously presented) A method according to claim 489 including the step of having said laser beam strike said processing surface of said cylindrical drum at an angle which is less than 90 degrees relative to a tangent perpendicular to a rotational axis of said drum where said laser beam strikes said processing surface.

508. (previously presented) A method according to claim 489 including the step of providing a plurality of laser fibers.

509. (previously presented) A method according to claim 489 wherein an optics is provided so that diverging rays of the laser beam exiting the core of the laser fiber enter the modulator parallel.

510. (previously presented) A method according to claim 489 wherein said modulator comprises an electro-optical modulator which changes a polarization direction of the laser beam passing there through, and wherein a polarization direction sensitive mirror follows said electro-optical modulator.

511. (previously presented) A method according to claim 489 wherein said laser gun outputs onto said processing surface a plurality of said laser beams.

512. (previously presented) A method according to claim 511 wherein said plurality of laser beams are focused to a common spot.

513. (previously presented) A method according to claim 489 wherein a plurality of laser beams are output by said laser gun to provide spots along a line next to one another on said processing surface.

514. (previously presented) A method according to claim 489 wherein a plurality of moveable laser guns are provided spaced apart from each other adjacent to said rotatable drum and in a direction along a rotational axis of said drum.

515. (previously presented) A method according to claim 489 wherein said laser beam striking the processing surface is amplitude modulated to cause a changing intensity of said laser light beam for causing different amounts of said metal surface to be eroded depending on an intensity of said laser beam.

516. (currently amended) A method for engraving half-tone cups for receiving a printing fluid into a rotogravure printing form, comprising the steps of:

providing a mounting which receives the printing form comprising a rotatable rotogravure printing drum having a round outer metal peripheral processing surface which is at least one of copper and chrome;

providing at least one fiber laser comprising a pump source and a laser fiber comprising ~~an infeed end and~~ an outfeed end, the pump source being positioned at said ~~infeed end~~ laser fiber, and the laser fiber comprising a core surrounded by a pump core;

providing a laser gun mounted for lateral movement alongside said rotatable drum, said laser gun having a focusing optics, and a laser beam output by said laser fiber outfeed end being deliverable to said focusing optics;

providing a modulator to control an intensity of the laser beam; and

while rotating said drum, outputting from said laser fiber the laser beam which is diffraction-limited to permit said focusing optics to focus the laser beam onto said processing surface as a spot having a spot size with a power density therein of at least approximately ~~10^8~~ $\underline{10^7}$ W/cm^2 at maximum beam intensity and sufficiently small to create the rotogravure half-tone cups in said metal processing surface for printing fine structure rotogravure images or text by removing metal material from said processing surface.

517. (currently amended) A flexo printing system for use in creating a fine structure for images or text on a processing surface of a flexo printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounding by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said focusing optics;

a modulator which controls the laser beam; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the laser beam as said drum is rotating onto said processing surface as a spot having a spot size sufficiently small to create said fine structure for images or text by removing material from said processing surface.

518. (previously presented) A system according to claim 517 wherein the spot size is equal to or less than approximately 10 micrometers in diameter.

519. (currently amended) A system according to claim 517 wherein the laser beam has a power of at ~~lest~~ least approximately 100 watts.

520. (previously presented) A system according to claim 517 wherein the spot size is equal to or less than approximately 10 micrometers and the laser beam has a power of at least approximately 100 watts.

521. (currently amended) A system according to claim 517 wherein the laser beam at said spot has a power density of at least approximately ~~10^8~~ 10^7 W/cm^2.

522. (previously presented) A system according to claim 517 wherein said pump source comprises at least one laser diode.

523. (currently amended) A system according to claim 517 wherein:

a housing is provided having said rotatable drum mounting;

the pump source and an end of said laser fiber ~~infeed end~~ opposite said outfeed end are mounted in a fixed position with respect to said housing;

the laser gun is mounted for lateral movement along an axis parallel to a rotational axis of said rotatable drum; and

said laser gun having at an output end adjacent said drum said focusing optics and at an input end said modulator, said laser fiber outfeed end being

connected to said input end of said laser gun and moveable as said laser gun moves.

524. (previously presented) A system according to claim 523 wherein said laser fiber outfeed end is secured at said input end of said laser gun.

525. (currently amended) A system according to claim 517 wherein a ~~mirror~~ reflection surface is positioned to deflect the laser beam when it is intended that it not strike said processing surface.

526. (previously presented) A system according to claim 517 wherein a sump is positioned to receive the laser beam when it is intended that it not strike said processing surface.

527. (currently amended) A system of claim 526 wherein a ~~mirror~~ reflection surface is positioned to deflect said laser beam to said sump when it is intended that the laser beam should not strike said processing surface.

528. (currently amended) A system according to claim 527 wherein said ~~mirror~~ reflection surface and sump are positioned on said laser gun.

529. (previously presented) A system according to claim 517 wherein a diffraction optics is provided between said focusing optics and an output of said modulator.

530. (previously presented) The system of claim 517 wherein the modulator is located on said laser gun.

531. (currently amended) A system according to claim 517 wherein said pump source comprises a plurality of laser diodes followed by an optics which directs outputs from said plurality of laser diodes to ~~said infeed~~ an end of said laser fiber opposite said outfeed end.

532. (currently amended) A system according to claim 517 wherein said laser fiber has ~~an infeed~~ ~~mirror~~ a reflection surface at ~~said infeed~~ an end opposite said outfeed end.

533. (previously presented) A system according to claim 523 wherein said laser fiber has a length which is significantly greater than a distance between said pump source and said input end of said laser gun where said laser fiber outfeed end is connected.

534. (previously presented) A system according to claim 523 wherein said laser fiber is flexibly arranged in a pattern with bends to take up an excess length of said laser fiber between said laser gun and said pump source.

535. (previously presented) A system according to claim 523 wherein said housing has a controller, and wherein at a top side of said housing said rotatable drum is positioned along with said laterally moveable laser gun.

536. (currently amended) A system according to claim 517 wherein said laser fiber has an outfeed ~~mirror~~ reflection surface at said outfeed end.

537. (previously presented) A system according to claim 517 wherein at said outfeed end said laser fiber has a terminator with an optics adjacent an input of said modulator which converts the laser beam exiting the laser fiber with diverging rays to parallel rays which enter at the input of the modulator.

538. (previously presented) A system according to claim 537 wherein said terminator is adjustably attached to said laser fiber at said outfeed end to set a distance between an outfeed end of said core of said laser fiber and said optics.

539. (previously presented) A system according to claim 517 wherein said modulator comprises an acousto-optical modulator which receives an acoustical control signal having a frequency which controls a deflection angle of the laser beam output from said modulator.

540. (previously presented) A system according to claim 517 wherein said modulator comprises an acousto-optical modulator and an amplitude of an acoustical control signal fed to said modulator controls whether or not the laser beam exists from the modulator.

541. (currently amended) A system according to claim 526 wherein said ~~mirror~~ reflection surface is positioned after an output of said modulator and is angled so as to direct said at least a portion of said laser beam deflected by the ~~mirror~~

reflection surface to said sump, said sump being attached to said laser gun radially outwardly from a longitudinal axis of said laser gun.

542. (currently amended) A system according to claim 525 wherein said ~~mirror~~ reflection surface is positioned on said laser gun with respect to a longitudinal axis of said laser gun between an output of said modulator and a diffraction optics in said laser gun.

543. (previously presented) A system according to claim 517 wherein said modulator comprises an acousto-optical modulator on said laser gun and is positioned such that an acoustical control signal fed to said modulator controls an output angle of said laser beam from said modulator by a frequency of said acoustical control signal to selectively strike said processing surface through said focusing optics.

544. (previously presented) A system according to claim 525 wherein said modulator comprises an acousto-optical modulator positioned in said laser gun such that given no acoustical control signal fed to said modulator the output laser beam from the modulator hits said mirror and given presence of the acoustical signal with a prescribed frequency said laser beam output from said modulator passes through said focusing optics and hits said processing surface.

545. (previously presented) A system according to claim 529 wherein said diffraction optics is mounted in said laser gun, and, relative to a traveling direction of

the laser beam, said diffraction optics causes a laser beam output from said modulator to diverge prior to passing through said focusing optics.

546. (previously presented) A system according to claim 517 wherein said focusing optics focuses the laser beam onto said processing surface to form a laser spot at said processing surface having a diameter equal to or less than approximately 10 μm.

547. (previously presented) A system according to claim 517 wherein said laser beam output by the laser gun is oriented so that the laser beam strikes said processing surface at an angle which is less than 90° relative to a tangent perpendicular to said rotational axis of said drum where said laser beam strikes said processing surface.

548. (previously presented) A system according to claim 517 wherein said laser fiber converts a relatively large diameter of a pump spot at said infeed end to a relatively much smaller diameter of the output laser beam from said core at said outfeed end of said laser fiber.

549. (previously presented) A system according to claim 517 wherein said laser fiber at said outfeed end connects through a passive fiber to said laser gun.

550. (previously presented) A system according to claim 517 wherein said laser fiber at said outfeed end has a terminator, said terminator having an open portion with one end of said open portion having an end of said laser fiber core and

pump core positioned thereat and at an opposite end of said open portion an optics positioned in front of said modulator.

551. (previously presented) A system according to claim 517 wherein a plurality of laser fibers are provided between said pump source and said laser gun, and a coupler which combines outfeed ends of said plurality of laser fibers being connected to said laser gun.

552. (previously presented) A system according to claim 551 wherein a plurality of fiber lasers are provided.

553. (previously presented) A system according to claim 517 wherein said laser fiber connects to a coupler having at its output end a plurality of passive fibers, output ends of said passive fibers being connected to said laser gun.

554. (currently amended) A system according to claim 517 wherein said modulator comprises an electro-optical modulator which changes a polarization direction of a laser beam passing therethrough, and wherein a polarization direction sensitive ~~mirror~~ reflection surface follows said electro-optical modulator so that depending upon a polarization direction, the ~~mirror~~ reflection surface either transmits a laser beam which is communicated to said focusing optics and then to said processing surface, or deflects the laser beam.

555. (previously presented) A system according to claim 517 wherein said laser gun outputs onto said processing surface a plurality of said laser beams.

556. (previously presented) A system according to claim 555 wherein said plurality of laser beams are focused to a common spot.

557. (previously presented) A system according to claim 555 wherein said plurality of laser beams are arranged to provide spots along a line next to one another on said processing surface.

558. (previously presented) A laser system according to claim 517 wherein a plurality of said laser guns are provided spaced from each other adjacent to said rotatable drum and in a direction along said rotational axis of said drum, each laser gun being fed by at least one laser fiber.

559. (previously presented) A system according to claim 517 wherein in said laser gun between said focusing optics and said processing surface a base member having an inner cavity is provided with a transparent plate through which said laser beam passes on its way to said processing surface through said cavity, and after said transparent plate at least one extraction channel which extracts unwanted eroded material from said cavity.

560. (previously presented) A system according to claim 523 wherein the housing has at an upper side said rotatable drum and said movable laser gun positioned adjacent thereto, and wherein a lower portion of said housing has a controller, modulation signal unit, and a cooling system, the cooling system being connected to cool said pump source, and wherein said laser fiber extends between

said pump source fixedly mounted in said lower portion of said housing up to said laser gun at said upper portion of said housing.

561. (previously presented) A system according to claim 517 wherein said laser beam striking said processing surface has a sufficient power density to melt the processing surface as the rotatable drum rotates.

562. (previously presented) A system according to claim 517 wherein a plurality of screens are simultaneously produced on the drum with each screen being produced by a separate laser gun.

563. (previously presented) A system according to claim 517 wherein the laser beam on the process surface melts material to create the structure on the processing surface.

564. (previously presented) A system according to claim 517 wherein the laser fiber has an absorption efficiency of more than 60%.

565. (previously presented) A system according to claim 517 wherein the laser fiber core has a diameter which creates a laser radiation beam at its outfeed end having a diameter of approximately 10 μm or less.

566. (previously presented) A system according to claim 517 wherein the modulator is located on the laser gun and an optics is provided such that parallel

rays of the laser gun leaving the modulator diverge and when the laser beam passes through the focusing optics rays of the laser beam converge.

567. (previously presented) A system according to claim 523 wherein the laser fiber outfeed end is directly connected at the input end of the movable laser gun and proceeds in a pattern with bends back to the pump source at a fixed location on the housing.

568. (previously presented) A system according to claim 517 wherein said laser gun outputs a plurality of side-by-side laser beams along a line to remove material on said processing surface of said flexo printing form as said drum is rotated.

569. (previously presented) A system according to claim 568 wherein said laser gun has a beam splitter which splits the laser beam from said laser fiber into said plurality of laser beams.

570. (previously presented) A system according to claim 568 wherein a plurality of said fiber lasers are provided with a plurality of corresponding laser fibers having their respective outfeed ends connected to the laser gun.

571. (previously presented) A system according to claim 569 wherein said beam splitter comprises a coupling having an input connecting to an outfeed end of said laser fiber, and at an output of said coupling a plurality of passive fibers output said plurality of side-by-side laser beams.

572. (previously presented) A system according to claim 568 wherein a laser beam from said outfeed end of said laser fiber is coupled to said modulator, said modulator comprising an acousto-optical modulator having an acoustical control signal fed thereto having a plurality of frequencies so that said acousto-optical modulator creates said plurality of said laser beams fed through said focusing optics to said processing surface.

573. (previously presented) A system according to claim 568 wherein a plurality of modulators are provided each having an input receiving a laser beam from a respective laser fiber of a plurality of fiber lasers connecting to said laser gun.

574. (previously presented) A system according to claim 568 wherein a plurality of fiber lasers having a respective plurality of laser fibers connect to said laser gun and wherein an acousto-optical modulator which is common to all laser beams output from said respective laser fibers is provided.

575. (previously presented) A system according to claim 568 wherein said laser gun is tiltable so that a line of laser spots strike said processing surface at an angle to adjust a spacing between laser spots on the processing surface.

576. (previously presented) A system according to claim 568 wherein said modulator comprises a multi-channel acousto-optical modulator having a control signal with different frequencies fed to it, said frequencies being selected to create spots on said processing surface corresponding to said plurality of laser beams.

577. (previously presented) A system according to claim 576 wherein said frequencies control a spacing between laser spots on the processing surface.

578. (previously presented) A system according to claim 577 wherein an amplitude of each of the plurality of signals controls whether or not the associated laser beam is output or not from the modulator.

579. (currently amended) A flexo printing system for use in creating a fine structure for images or text on a processing surface of a flexo printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said focusing optics;

a beam splitter which creates a plurality of laser beams from said at least one laser beam and a modulator system which individually modulates each of said laser beams; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the plurality of laser beams as said drum is rotating onto said processing surface as a plurality of spots along a line, the spots having a spot

size sufficiently small to create said fine structure for images or text by removing material from said processing surface.

580. (currently amended) A flexo printing system for use in creating a fine structure for images or text on a processing surface of a flexo printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

a plurality of fiber lasers each comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fibers each outputting a respective continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beams output from said respective laser fiber outfeed ends being delivered to said focusing optics;

a modulator system which separately controls each of the laser beams; and

the laser beams output from said laser fibers each being diffraction-limited to permit said focusing optics to focus the laser beams as said drum is rotating onto said processing surface as a plurality of spots along a line, the spots having a spot size sufficiently small to create said fine structure for images or text by removing material from said processing surface.

581. (currently amended) A method for removing material at a processing surface of a flexo printing form for creating a fine structure image or text on a processing surface thereof, comprising the steps of:

providing a mounting with a rotatable drum thereon having the flexo printing form mounted therearound;

providing at least one fiber laser comprising a laser diode pump source and a laser fiber having ~~an infeed end and~~ an outfeed end and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam when pumped;

providing a laser gun mounted for lateral movement alongside said rotatable drum, said laser gun having a focusing optics;

providing a modulator to control the laser beam; and

outputting the laser beam as a diffraction-limited laser beam from the laser fiber to permit said focusing optics to focus the laser beam as said drum is rotating onto said processing surface as a spot having a spot size sufficiently small to create said fine structure for images or text by removing the material from said processing surface.

582. (previously presented) A method according to claim 581 wherein the spot size is equal to or less than approximately 10 micrometers diameter.

583. (previously presented) A method according to claim 581 wherein the laser beam at the spot has a power of at least approximately 100 watts.

584. (currently amended) A method according to claim 581 wherein the laser beam at said spot has a power density of at least approximately ~~10^8~~ $\underline{10^7}$ W/cm^2 at the spot.

585. (previously presented) A method according to claim 581 wherein said pump source comprises at least one laser diode.

586. (currently amended) A method according to claim 581 including the steps of:

providing a housing for said rotatable drum mounting;

mounting the pump source and an end of said laser fiber ~~infeed end~~ opposite said outfeed end in a fixed position with respect to said housing;

mounting the laser gun for lateral movement along an axis parallel to a rotational axis of said rotatable drum; and

providing said laser gun at an output end adjacent said drum with said focusing optics, and at an input end said modulator, and providing said laser fiber outfeed end connected to said input end of said laser gun so that as the laser gun moves the laser fiber outfeed end also moves.

587. (previously presented) A method according to claim 586 wherein said laser fiber outfeed end is secured at said input end of said laser gun and moves along with said laser gun during said structuring of the processing surface.

588. (currently amended) A method according to claim 586 wherein a ~~mirror~~ reflection surface is positioned in said laser gun after an output of said modulator, the sump is positioned on said laser gun, and as the flexo printing form is being structured, the laser beam from said modulator is deflected by said ~~mirror~~ reflection surface to said sump.

589. (previously presented) A method according to claim 581 including providing an optics between said focusing optics and an output of said modulator so that parallel rays from said modulator diverge prior to the laser beam entering the focusing optics.

590. (currently amended) A method according to claim 581 including providing a plurality of laser diodes followed by an optics which directs outputs from said plurality of laser diodes to ~~said infeed~~ an end of said laser fiber opposite said outfeed end.

591. (previously presented) A method of claim 581 including the step of providing said laser fiber with a length sufficiently greater than a distance between said pump source and an input end of said laser gun where said laser fiber outfeed end is connected.

592. (previously presented) A method according to claim 581 wherein at said outfeed end of said laser fiber an optics is provided so that the laser beam entering an input to said modulator has parallel rays.

593. (previously presented) A method according to claim 581 including the step of connecting said laser fiber at said outfeed end through a passive fiber to said laser gun.

594. (previously presented) A method according to claim 581 wherein said modulator comprises an acoustical-optical modulator mounted in said laser gun, and

providing an acoustical control signal having a frequency which controls a deflection angle of the laser beam output from said modulator.

595. (previously presented) A method according to claim 581 wherein an amplitude of a control signal fed to said modulator controls whether or not the laser beam exits from the modulator.

596. (previously presented) A method according to claim 581 wherein said modulator comprises an acousto-optical modulator mounted in said laser gun and positioned such that an acoustical control signal fed to said modulator controls by its frequency an output angle of said laser beam from said modulator to selectively strike said processing surface through said focusing optics.

597. (previously presented) A method according to claim 581 including the step of having said laser beam strike said processing surface of said cylindrical drum at an angle which is less than 90° relative to a tangent perpendicular to a rotational axis of said drum where said laser beam strikes said processing surface.

598. (previously presented) A method according to claim 581 including the step of providing a plurality of laser fibers.

599. (previously presented) A method according to claim 581 wherein an optics is provided so that diverging rays of the laser beam exiting the core of the laser fiber enter the modulator parallel.

600. (currently amended) A method according to claim 581 wherein said modulator comprises an electro-optical modulator which changes a polarization direction of the laser beam passing therethrough, and wherein a polarization direction sensitive ~~mirror~~ reflection surface follows said electro-optical modulator.

601. (previously presented) A method according to claim 581 wherein said laser gun outputs onto said processing surface a plurality of said laser beams.

602. (previously presented) A method according to claim 601 wherein said plurality of laser beams are focused to a common spot.

603. (previously presented) A method according to claim 601 wherein said plurality of laser beams result in spots along a line next to one another on said processing surface.

604. (previously presented) A method according to claim 581 wherein a plurality of moveable laser guns are provided spaced apart from each other adjacent to said rotatable drum and in a direction along a rotational axis of said drum.

605. (previously presented) A method according to claim 581 wherein said laser gun outputs a plurality of side-by-side laser beams to provide laser spots along a line to remove material on said processing surface of said flexo printing form as said drum is rotated.

606. (previously presented) A method according to claim 605 wherein said laser gun has a beam splitter which splits the laser beam from said laser fiber into said plurality of laser beams.

607. (previously presented) A method according to claim 605 wherein a plurality of said fiber lasers are provided with a plurality of corresponding laser fibers having their respective outfeed ends connected to the laser gun.

608. (previously presented) A method according to claim 605 wherein a modulation system is provided for individually modulating each of the laser beams.

609. (previously presented) A method according to claim 605 wherein said laser gun is tiltable so that said line of laser spots strikes the processing surface at an adjustable angle to adjust a spacing between the laser spots on the processing surface.

610. (previously presented) A method according to claim 605 wherein said modulator comprises a multi-channel acousto-optical modulator having a plurality of signals with different frequencies fed to it by an acoustical control signal, said frequencies being selected to create said plurality of laser beams.

611. (previously presented) A method according to claim 610 wherein said frequencies control a spacing between the laser spots on the processing surface.

612. (previously presented) A method according to claim 610 wherein an amplitude of the signal with different frequency controls whether or not the associated laser beam is output or not from the modulator.

613. (currently amended) A method for removing material at a processing surface of a flexo printing form for creating a fine structure for images or text on a processing surface thereof, comprising the steps of:

providing a mounting with a rotatable drum thereon having the flexo-printing form mounted thereon;

providing at least one fiber laser comprising a laser diode pump source and a laser fiber having ~~an infeed end and~~ an outfeed end and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam when pumped;

providing a laser gun mounted for lateral movement alongside said rotatable drum, said laser gun having a focusing optics, and said laser gun outputting a plurality of laser beams along a line;

providing a modulator system which controls each of the laser beams independently; and

each of the laser beams being diffraction-limited to permit said focusing optics to focus each of the respective laser beams as said drum is rotating onto said processing surface as a plurality of spots along the line, the spots having a spot size sufficiently small to create said fine structure for images or text by removing the material from said processing surface.

614. (currently amended) An offset printing system for use in creating a fine pattern for images or text on a processing surface of an offset printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounding by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said focusing optics;

a modulator which controls the laser beam; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the laser beam as said drum is rotating onto said processing surface as a spot having a spot size sufficiently small to create said fine pattern for images or text by processing material on said processing surface.

615. (previously presented) A system according to claim 614 wherein the spot size is equal to or less than approximately 10 micrometers in diameter.

616 (previously presented) A system according to claim 614 wherein the laser beam has a power of at least approximately 100 watts.

617. (currently amended) A system according to claim 614 wherein the laser beam at said spot has a power density of at least approximately ~~10^8~~ $\underline{10^7}$ W/cm^2.

618. (previously presented) A system according to claim 614 wherein said pump source comprises at least one laser diode.

619. (currently amended) A system according to claim 614 wherein:

a housing is provided having said rotatable drum mounting;

the pump source and an end of said laser fiber ~~infeed end~~ opposite said outfeed end are mounted in a fixed position with respect to said housing;

the laser gun is mounted for lateral movement along an axis parallel to a rotational axis of said rotatable drum; and

said laser gun having at an output end adjacent said drum said focusing optics and at an input end said modulator, said laser fiber outfeed end being connected to said input end of said laser gun and moveable as said laser gun moves.

620. (previously presented) A system according to claim 619 wherein said laser fiber outfeed end is secured at said input end of said laser gun.

621. (currently amended) A system according to claim 614 wherein a ~~mirror~~ reflection surface is positioned to deflect the laser beam when it is intended that it not strike said processing surface.

622. (previously presented) A system according to claim 614 wherein a sump is positioned to receive the laser beam when it is intended that it not strike said processing surface.

623. (currently amended) A system of claim 622 wherein a ~~mirror~~ reflection surface is positioned to deflect said laser beam to said sump when it is intended that the laser beam should not strike said processing surface.

624. (currently amended) A system according to claim 623 wherein said ~~mirror~~ reflection surface and sump are positioned on said laser gun.

625. (previously presented) A system according to claim 614 wherein a diffraction optics is provided between said focusing and an output of said modulator.

626. (previously presented) The system of claim 614 wherein the modulator is located on said laser gun.

627. (currently amended) A system according to claim 614 wherein said pump source comprises a plurality of laser diodes followed by an optics which directs outputs from said plurality of laser diodes to ~~said~~ an ~~infeed~~ end of said laser fiber opposite said outfeed end.

628. (currently amended) A system according to claim 614 wherein said laser fiber has ~~an infeed mirror~~ a reflection surface at ~~said infeed~~ an end opposite said outfeed end.

629. (previously presented) A system according to claim 619 wherein said laser fiber has a length which is significantly greater than a distance between said

pump source and said input end of said laser gun where said laser fiber outfeed end is connected.

630. (previously presented) A system according to claim 619 wherein said laser fiber is flexibly arranged in a pattern with bends to take up an excess length of said laser fiber between said laser gun and said pump source.

631. (previously presented) A system according to claim 619 wherein said housing has a controller, and wherein at a top side of said housing said rotatable drum is positioned along with said laterally moveable laser gun.

632. (currently amended) A system according to claim 614 wherein said laser fiber has an outfeed ~~mirror~~ reflection surface at said outfeed end.

633. (previously presented) A system according to claim 614 wherein at said outfeed end said laser fiber has a terminator with an optics adjacent an input of said modulator which converts the laser beam exiting the laser fiber with diverging rays to parallel rays which enter at the input of the modulator.

634. (previously presented) A system according to claim 633 wherein said terminator is adjustably attached to said laser fiber at said outfeed end to set a distance between an outfeed end of said core of said laser fiber and said optics.

635. (previously presented) A system according to claim 614 wherein said modulator comprises an acousto-optical modulator which receives an acoustical

control signal having a frequency which controls a deflection angle of the laser beam output from said modulator.

636. (previously presented) A system according to claim 614 wherein said modulator comprises an acousto-optical modulator and an amplitude of an acoustical control signal fed to said modulator controls whether or not the laser beam exits from the modulator.

637. (currently amended) A system according to claim 623 wherein said ~~mirror~~ <u>reflection surface</u> is positioned after an output of said modulator and is angled so as to direct said at least a portion of said laser beam deflected by the ~~mirror~~ <u>reflection surface</u> to said sump, said sump being attached to said laser gun radially outwardly from a longitudinal axis of said laser gun.

638. (currently amended) A system according to claim 621 wherein said ~~mirror~~ <u>reflection surface</u> is positioned on said laser gun with respect to a longitudinal axis of said laser gun between an output of said modulator and a diffraction optics in said laser gun.

639. (previously presented) A system according to claim 614 wherein said modulator comprises an acousto-optical modulator on said laser gun and is positioned such that an acoustical control signal fed to said modulator controls an output angle of said laser beam from said modulator by a frequency of said acoustical control signal to selectively strike said processing surface through said focusing optics.

640. (currently amended) A system according to claim 621 wherein said modulator comprises an acousto-optical modulator positioned in said laser gun such that given no acoustical control signal fed to said modulator the output laser beam from the modulator hits said ~~mirror~~ reflection surface and given presence of the acoustical signal with a prescribed frequency said laser beam output from said modulator passes through said focusing optics and hits said processing surface.

641. (previously presented) A system according to claim 625 wherein said diffraction optics is mounted in said laser gun, and, relative to a traveling direction of the laser beam, said diffraction optics causes a laser beam output from said modulator to diverge prior to passing through said focusing optics.

642. (previously presented) A system according to claim 614 wherein said focusing optics focuses the laser beam onto said processing surface to form a laser spot at said processing surface having a diameter equal to or less than approximately 10 μm.

643. (previously presented) A system according to claim 614 wherein said laser beam output by the laser gun is oriented so that the laser beam strikes said processing surface at an angle which is less than 90° relative to a tangent perpendicular to said rotational axis of said drum where said laser beam strikes said processing surface.

644. (previously presented) A system according to claim 614 wherein said laser fiber converts a relatively large diameter of a pump spot at said infeed end to a

relatively much smaller diameter of the output laser beam from said core at said outfeed end of said laser fiber.

645. (previously presented) A system according to claim 614 wherein said laser fiber at said outfeed end connects through a passive fiber to said laser gun.

646. (previously presented) A system according to claim 614 wherein said laser fiber at said outfeed end has a terminator, said terminator having an open portion with one end of said open portion having an end of said laser fiber core and pump core positioned thereat and at an opposite end of said open portion an optics positioned in front of said modulator.

647. (previously presented) A system according to claim 614 wherein a plurality of laser fibers are provided between said pump source and said laser gun, and a coupler which combines outfeed ends of said plurality of laser fibers being connected to said laser gun.

648. (previously presented) A system according to claim 647 wherein a plurality of fiber lasers are provided.

649. (previously presented) A system according to claim 614 wherein said laser fiber connects to a coupler having at its output end a plurality of passive fibers, output ends of said passive fibers being connected to said laser gun.

650. (currently amended) A system according to claim 614 wherein said modulator comprises an electro-optical modulator which changes a polarization direction of a laser beam passing therethrough, and wherein a polarization direction sensitive ~~mirror~~ reflection surface follows said electro-optical modulator so that depending upon a polarization direction, the ~~mirror~~ reflection surface either transmits a laser beam which is communicated to said focusing optics and then to said processing surface, or deflects the laser beam.

651. (previously presented) A system according to claim 614 wherein said laser gun outputs onto said processing surface a plurality of said laser beams.

652. (previously presented) A system according to claim 651 wherein said plurality of laser beams are focused to a common spot.

653. (previously presented) A system according to claim 651 wherein said plurality of laser beams are arranged to provide spots along a line next to one another on said processing surface.

654. (previously presented) A laser system according to claim 614 wherein a plurality of said laser guns are provided spaced from each other adjacent to said rotatable drum and in a direction along said rotational axis of said drum, each laser gun being fed by at least one laser fiber.

655. (previously presented) A system according to claim 614 wherein in said laser gun between said focusing optics and said processing surface a base member

having an inner cavity is provided with a transparent plate through which said laser beam passes on its way to said processing surface through said cavity, and after said transparent plate at least one extraction channel which extracts unwanted eroded material from said cavity.

656. (previously presented) A system according to claim 614 wherein the housing has at an upper side said rotatable drum and said movable laser gun positioned adjacent thereto, and wherein a lower portion of said housing has a controller, modulation signal unit, and a cooling system, the cooling system being connected to cool said pump source, and wherein said laser fiber extends between said pump source fixedly mounted in said lower portion of said housing up to said laser gun at said upper portion of said housing.

657. (previously presented) A system according to claim 614 wherein a plurality of screens are simultaneously produced on the drum with each screen being produced by a separate laser gun.

658. (previously presented) A system according to claim 614 wherein the laser beam heats material on the processing surface to create said fine pattern.

659. (previously presented) A system according to claim 614 wherein the laser fiber has an absorption efficiency of more than 60%.

660. (previously presented) A system according to claim 614 wherein the laser fiber core has a diameter which creates a laser radiation beam at its outfeed end having a diameter of approximately 10 μm or less.

661. (previously presented) A system according to claim 614 wherein the modulator is located on the laser gun and an optics is provided such that parallel rays of the laser gun leaving the modulator diverge and when the laser beam passes through the focusing optics rays of the laser beam converge.

662. (previously presented) A system according to claim 619 wherein the laser fiber outfeed end is directly connected at the input end of the movable laser gun and proceeds in a pattern with bends back to the pump source at a fixed location on the housing.

663. (previously presented) A system according to claim 614 wherein said laser gun outputs a plurality of side-by-side laser beams along a line to process material on said processing surface of said offset printing form as said drum is rotated.

664. (previously presented) A system according to claim 663 wherein said laser gun has a beam splitter which splits the laser beam from said laser fiber into said plurality of laser beams.

665. (previously presented) A system according to claim 663 wherein a plurality of said fiber lasers are provided with a plurality of corresponding laser fibers having their respective outfeed ends connected to the laser gun.

666. (previously presented) A system according to claim 664 wherein said beam splitter comprises a coupling having an input connecting to an outfeed end of said laser fiber, and at an output of said coupling a plurality of passive fibers output said plurality of side-by-side laser beams.

667. (previously presented) A system according to claim 663 wherein a laser beam from said outfeed end of said laser fiber is coupled to said modulator, said modulator comprising an acousto-optical modulator having an acoustical control signal fed thereto having a plurality of frequencies so that said acousto-optical modulator creates said plurality of said laser beams fed through said focusing optics to said processing surface.

668. (previously presented) A system according to claim 663 wherein a plurality of modulators are provided each having an input receiving a laser beam from a respective laser fiber of a plurality of fiber lasers connecting to said laser gun.

669. (previously presented) A system according to claim 663 wherein a plurality of fiber lasers having a respective plurality of laser fibers connect to said laser gun and wherein an acousto-optical modulator which is common to all laser beams output from said respective laser fibers is provided.

670. (previously presented) A system according to claim 663 wherein said laser gun is tiltable so that a line of laser spots strike said processing surface at an angle to adjust a spacing between laser spots on the processing surface.

671. (previously presented) A system according to claim 663 wherein said modulator comprises a multi-channel acousto-optical modulator having a control signal with different frequencies fed to it, said frequencies being selected to create spots on said processing surface corresponding to said plurality of laser beams.

672. (previously presented) A system according to claim 671 wherein said frequencies control a spacing between laser spots on the processing surface.

673. (previously presented) A system according to claim 672 wherein an amplitude of each of the plurality of signals controls whether or not the associated laser beam is output or not from the modulator.

674. (currently amended) An offset printing system for use in creating a fine pattern for images or text on a processing surface of an offset printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said laser gun;

a beam splitter which creates a plurality of laser beams from said at least one laser beam and a modulator system which individually modulates each of said laser beams; and

the laser beam output from said laser fiber being diffraction-limited to permit said focusing optics to focus the plurality of laser beams as said drum is rotating onto said processing surface as a plurality of spots along a line, the spots having a spot size sufficiently small to create said fine pattern for images or text by processing material on said processing surface.

675. (currently amended) An offset printing system for use in creating a fine pattern for images or text on a processing surface of an offset printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

a plurality of fiber lasers each comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounding by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fibers each outputting a respective continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said respective laser fiber outfeed end being delivered to said focusing optics;

a modulator which separately controls each of the laser beams; and

the laser beam output from said laser fibers each being diffraction-limited to permit said focusing optics to focus the laser beams as said drum is rotating onto said processing surface as a plurality of spots along a line, the spots having a spot size sufficiently small to create said fine patterns for images or text by processing material on said processing surface.

676. (currently amended) A method for processing material at a processing surface of an offset printing form for creating a fine pattern for images or text on a processing surface thereof, comprising the steps of:

providing a mounting with a rotatable drum thereon having the offset printing form mounted therearound;

providing at least one fiber laser comprising a laser diode pump source and a laser fiber having ~~an infeed end and~~ an outfeed end and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam when pumped;

providing a laser gun mounted for lateral movement alongside said rotatable drum, said laser gun having a focusing optics;

providing a modulator to control the laser beam; and

outputting the laser beam as a diffraction-limited laser beam from the laser fiber to permit said focusing optics to focus the laser beam as said drum is rotating onto said processing surface as a spot having a spot size sufficiently small to create said fine pattern for images or text by processing the material on said processing surface.

677. (previously presented) A method according to claim 676 wherein the spot size is equal to or less than approximately 10 micrometers diameter.

678. (previously presented) A method according to claim 676 wherein the laser beam at the spot has a power of at least approximately 100 watts.

679. (currently amended) A method according to claim 676 wherein the laser beam at said spot has a power density of at least approximately ~~10^8~~ $\underline{10^7}$ W/cm^2 at the spot.

680. (previously presented) A method according to claim 676 wherein said pump source comprises at least one laser diode.

681. (currently amended) A method according to claim 676 including the steps of:

providing a housing for said rotatable drum mounting;

mounting the pump source and ~~said~~ <u>an end of said</u> laser fiber ~~infeed end~~ <u>opposite said outfeed end</u> in a fixed position with respect to said housing;

mounting the laser gun for lateral movement along an axis parallel to a rotational axis of said rotatable drum; and

providing said laser gun at an output end adjacent said drum with said focusing optics, and at an input end said modulator, and providing said laser fiber outfeed end connected to said input end of said laser gun so that as the laser gun moves the laser fiber outfeed end also moves.

682. (previously presented) A method according to claim 681 wherein said laser fiber outfeed end is secured at said input end of said laser gun and moves along with said laser gun during said processing of the processing surface.

683. (currently amended) A method according to claim 681 wherein a ~~mirror~~ reflection surface is positioned in said laser gun after an output of said modulator, the sump is positioned on said laser gun, and as the ~~flexo~~ offset printing form is being structured, the laser beam from said modulator is deflected by said ~~mirror~~ reflection surface to said sump.

684. (previously presented) A method according to claim 676 including providing optics between said focusing optics and an output of said modulator so that parallel rays from said modulator diverge prior to the laser beam entering the focusing optics.

685. (currently amended) A method according to claim 676 including providing a plurality of laser diodes followed by an optics which directs outputs from said plurality of laser diodes to ~~said infeed~~ an end of said laser fiber opposite said outfeed end.

686. (previously presented) A method of claim 676 including the step of providing said laser fiber with a length sufficiently greater than a distance between said pump source and an input end of said laser gun where said laser fiber outfeed end is connected.

687. (previously presented) A method according to claim 676 wherein at said outfeed end of said laser fiber an optics is provided so that the laser beam entering an input to said modulator has parallel rays.

688. (previously presented) A method according to claim 676 including the step of connecting said laser fiber at said outfeed end through a passive fiber to said laser gun.

689. (previously presented) A method according to claim 676 wherein said modulator comprises an acoustical-optical modulator mounted in said laser gun, and providing an acoustical control signal having a frequency which controls a deflection angle of the laser beam output from said modulator.

690. (previously presented) A method according to claim 676 wherein an amplitude of a control signal fed to said modulator controls whether or not the laser beam exits from the modulator.

691. (previously presented) A method according to claim 676 wherein said modulator comprises an acousto-optical modulator mounted in said laser gun and positioned such that an acoustical control signal fed to said modulator controls by its frequency an output angle of said laser beam from said modulator to selectively strike said processing surface through said focusing optics.

692. (previously presented) A method according to claim 676 including the step of having said laser beam strike said processing surface of said cylindrical drum

at an angle which is less than 90° relative to a tangent perpendicular to a rotational axis of said drum where said laser beam strikes said processing surface.

693. (previously presented) A method according to claim 676 including the step of providing a plurality of laser fibers.

694. (previously presented) A method according to claim 676 wherein an optics is provided so that diverging rays of the laser beam exiting the core of the laser fiber enter the modulator parallel.

695. (currently amended) A method according to claim 676 wherein said modulator comprises an electro-optical modulator which changes a polarization direction of the laser beam passing therethrough, and wherein a polarization direction sensitive ~~mirror~~ reflection surface follows said electro-optical modulator.

696. (previously presented) A method according to claim 676 wherein said laser gun outputs onto said processing surface a plurality of said laser beams.

697. (previously presented) A method according to claim 696 wherein said plurality of laser beams are focused to a common spot.

698. (previously presented) A method according to claim 696 wherein said plurality of laser beams result in spots along a line next to one another on said processing surface.

699. (previously presented) A method according to claim 676 wherein a plurality of moveable laser guns are provided spaced apart from each other adjacent to said rotatable drum and in a direction along a rotational axis of said drum.

700. (previously presented) A method according to claim 676 wherein said laser gun outputs a plurality of side-by-side laser beams to provide laser spots along a line to process material on said processing surface of said offset printing form as said drum is rotated.

701. (previously presented) A method according to claim 700 wherein said laser gun has a beam splitter which splits the laser beam from said laser fiber into said plurality of laser beams.

702. (previously presented) A method according to claim 676 wherein a plurality of said fiber lasers are provided with a plurality of corresponding laser fibers having their respective outfeed ends connected to the laser gun.

703. (previously presented) A method according to claim 700 wherein a modulation system is provided for individually modulating each of the laser beams.

704. (previously presented) A method according to claim 700 wherein said laser gun is tiltable so that said line of laser spots strikes the processing surface at an adjustable angle to adjust a spacing between the laser spots on the processing surface.

705. (previously presented) A method according to claim 700 wherein said modulator comprises a multi-channel acousto-optical modulator having a plurality of signals with different frequencies fed to it by an acoustical control signal, said frequencies being selected to create said plurality of laser beams.

706. (previously presented) A method according to claim 705 wherein said frequencies control a spacing between the laser spots on the processing surface.

707. (previously presented) A method according to claim 705 wherein an amplitude of the signal with each different frequency controls whether or not the associated laser beam is output or not from the modulator.

708. (currently amended) A method for processing material at a processing surface of an offset printing form for creating a fine pattern for images or text on a processing surface thereof, comprising the steps of:

providing a mounting with a rotatable drum thereon having the offset printing form mounted thereon;

providing at least one fiber laser comprising a laser diode pump source and a laser fiber having ~~an infeed end and~~ an outfeed end and a core surrounded by a pump core, said pump source being positioned at said ~~infeed end~~ <u>laser fiber</u>, and said laser fiber outputting a continuous wave laser beam when pumped;

providing a laser gun mounted for lateral movement alongside said rotatable drum, said laser gun having a focusing optics, and said laser gun outputting a plurality of laser beams along a line;

providing a modulator system which controls each of the laser beams independently; and

each of the laser beams being diffraction-limited to permit said focusing optics to focus each of the respective laser beams as said drum is rotating onto said processing surface as a plurality of spots along the line, the spots having a spot size sufficiently small to create said fine pattern for images or text by processing the material on said processing surface.

709. (currently amended) An offset printing system for use in creating a fine pattern for images or text on a processing surface of an offset printing form mounted on a rotatable drum having a round outer peripheral surface, comprising:

a mounting which receives said rotatable drum;

at least one fiber laser comprising a pump source and a laser fiber having ~~an infeed end,~~ an outfeed end[[,]] and a core surrounding by a pump core, said pump source being positioned at said ~~infeed end~~ laser fiber, and said laser fiber outputting a continuous wave laser beam;

a laser gun having a focusing optics and mounted for lateral movement alongside said rotatable drum, the laser beam output from said laser fiber outfeed end being delivered to said focusing optics, and said laser gun outputting a plurality of laser beams;

a modulator which separately controls each of the laser beams; and

the laser beam output from said laser fibers each being diffraction-limited to permit said focusing optics to focus the laser beams as said drum is rotating onto said processing surface as a plurality of spots along a line, the spots having a spot

size sufficiently small to create said fine pattern for images or text by processing material on said processing surface.